Public Safety and Security Response (PSSR) Capability Calculator: Technical Guide

Contents

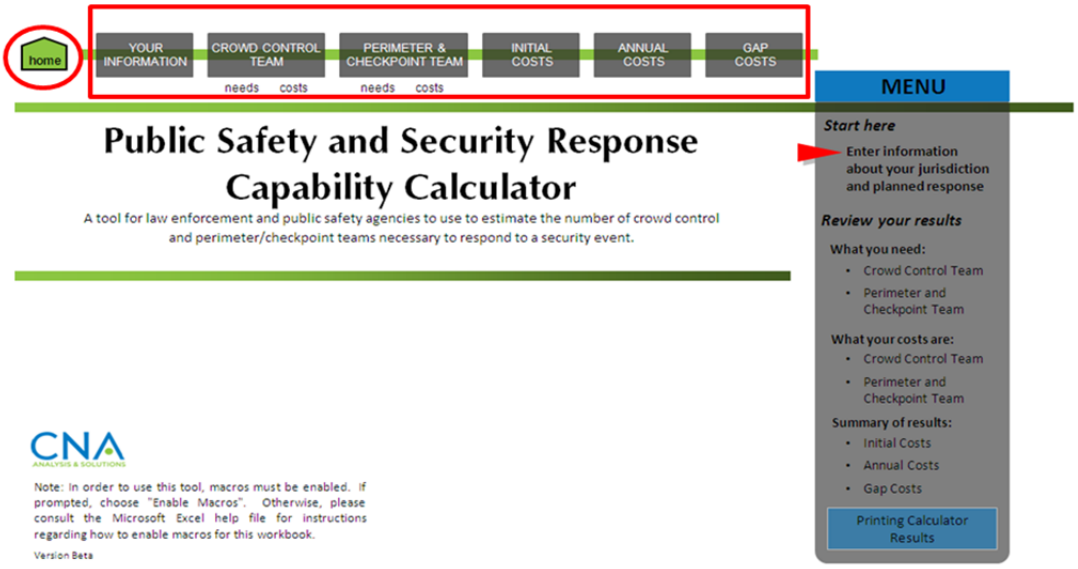
About the PSSR response capability calculator

This free tool estimates the resources a jurisdiction may need in order to execute a public safety and security response (PSSR) to a large event (e.g., a concert or sporting event) or an incident (e.g., a riot or terrorist attack). A PSSR team is capable of managing large-scale operations during an emergency or a public event. Critical operations conducted by these teams include crowd management, traffic control and enforcement, and establishment of a general saturation presence.[1] Through these operations, PSSR teams maintain order and preserve the peace. Teams are trained to operate in a variety of environments, including environments that have sustained chemical, biological, radiological, and nuclear (CBRN) exposure.

When you (the user) enter jurisdictional data into the capability calculator, the tool generates individualized results. Both the information presented to you throughout this tool as well the results generated from user inputs are based on sources from the Department of Justice and Federal Emergency Management Agency. A complete list of sources is available in the References section of this document.

When you open the tool, you may see a prompt that asks whether you want to enable or disable macros. It is important that you enable macros so that the tool can function as intended.[2] The homepage will appear as soon as you open the tool. Figure 1 provides a snapshot of the homepage.

Figure 1: Homepage and navigation bar



[1] U.S. Department of Homeland Security. Federal Emergency Management Agency (FEMA). "Typed Resource Definitions—Law Enforcement and Security Resources." 2007. http://www.fema.gov/pdf/emergency/nims/508-6_Law_Enfor_Secur_Resources.pdf (last accessed August 31, 2012) p. 58.

[2] If you are not prompted by Microsoft Excel to enable macros, please consult the Microsoft Excel help file for instructions.

You should save a copy of the calculator before starting. Click on "Save As" from the Microsoft Office icon or file menu in the upper, left-hand corner and create a desired file name (e.g., "PSSR Calculator - Jurisdiction Name").

The tool is separated into the following seven sections:

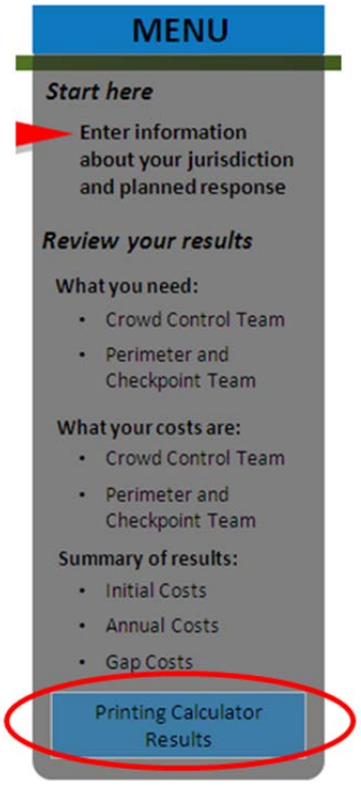
- Your Info
- Crowd Control Team Needs
- Crowd Control Team Costs
- Perimeter & Checkpoint Team Needs
- Perimeter & Checkpoint Team Costs
- Initial Costs
- Annual Costs
- Gap Costs

These categories are displayed on buttons at the top of the screen and will remain there to provide easy navigation as you use the tool. This group of buttons is referred to as the "navigation bar." Figure 1 indicates the location of the navigation bar, highlighted by a red square. At any point during the use of the tool, you can return to the homepage by clicking on the "home" icon, which is circled in Figure 1.

In addition to these categories, the homepage has a menu bar positioned at the far right side of the screen.

Figure 2 shows the menu bar in a magnified view.

Figure 2: Menu bar



You can also use the menu bar to quickly navigate from the home page to any other page in the calculator. In addition, once you have entered your jurisdiction's data, results are accessible from this menu bar. You can also learn how to print results by clicking on the blue button in the menu bar, circled in Figure 2.

Getting started: your information

To start using the tool, access the "Your Info" page using the menu bar or navigation bar. This page focuses on Crowd Control and Perimeter and Checkpoint factors for the event you are planning for. It is separated into the following three sections:

- Event Information
- Crowd Control Factors
- Perimeter/Checkpoint Factors

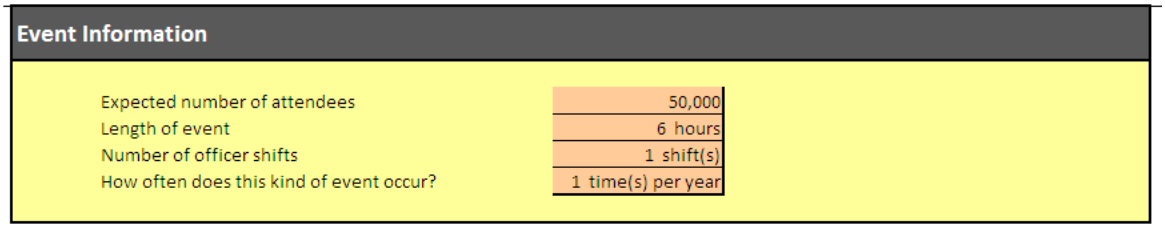
Although default numbers have been recorded throughout the tool, you can click on the orange cells and change their value. The tool automatically generates results after you make changes.

Now go to the first section of this page, labeled "Event Information."

Event Information

The PSSR requirements are based on the type and length of the expected event as well as the number of attendees. This data is used to estimate the PSSR resources needed to support the event. This section is shown in Figure 3.

Figure 3: Event information



The two different categories of PSSR teams available in this calculator are:

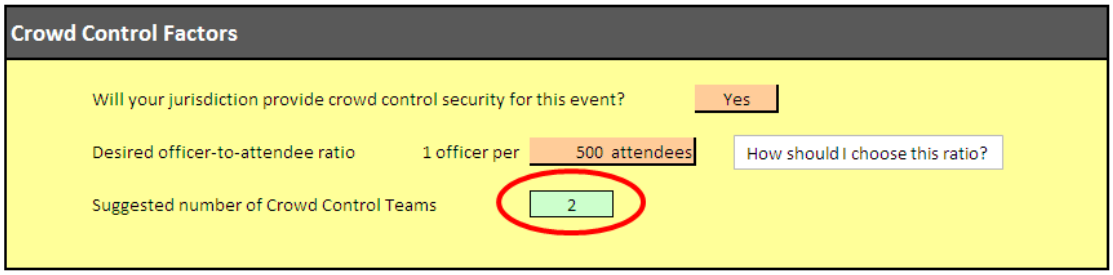
Crowd Control Team:[3] A Crowd Control Team must be prepared to manage crowds, control traffic, and maintain a general saturation presence in an effort to maintain order and preserve the peace. Crowd Control Teams are prepared to operate in CBRN environments.

Perimeter and Checkpoint Team:[4] A Perimeter and Checkpoint Team must be prepared to manage crowds, control traffic, and secure the area's perimeter through perimeter patrols and checkpoints.

Figure 4 shows the basic crowd control factors that a jurisdiction should consider when estimating the number of PSSR teams needed at an event or response. When you enter the desired officer-to-attendee ratio, the number of PSSR teams needed at the event or response is displayed in the green box, which has been circled in red. The user can adjust the officer-to-attendee ratio. The default ratio of one officer for every 500 attendees is based on recommendations provided in the *Special Events Contingency Planning: Job Aids Manual.*[5] Crowd composition and demographics, crowd type, possible crowd catalyst events, crowd density and throughput, and criminal or terrorist risks are all important considerations when you are determining the desired ratio.[6] You can access the help feature in this section by clicking on the white text box labeled "How should I choose this ratio?" Click on the text box a second time to close it.

[3] Wardell, Clarence. "Emergency Public Safety and Security Response (EPSSR) Capability: Estimation of Scenario-based Resource Requirements and Gaps." CNA report 13535. Jun. 2010.
[4] Ibid.
[5] U.S. Department of Homeland Security, Federal Emergency Management Agency. "Special Events Contingency Planning: Job Aids Manual." 2005. Available online: http://training.fema.gov/EMIWeb/downloads/is15aSpecialEventsPlanning-JAmanual.pdf (last accessed September 4, 2012).
[6] Ibid.

Figure 4: Crowd control factors



Now scroll down the page to the next section, labeled "Perimeter/Checkpoint Factors."

Perimeter/Checkpoint Factors

The next section determines the number of checkpoint teams and total perimeter barriers required for the event or response based on the type of perimeter and number of checkpoints you need to secure the site. If your jurisdiction does decide to provide perimeter security for the event, the calculator allows you to specify whether you would like a single or a double perimeter. When you are deciding between having a single or double perimeter, some important factors to consider include: different levels of access/credentialing (i.e., is the event open to both the general public and ticketholders?); the need to filter different types of traffic (i.e., vehicular vs. pedestrian); and different levels of security screening (i.e., metal detectors vs. x-ray units).[7] You can also access the help feature in this section by clicking on the white text box labeled "What's the difference?" To close the text box, click on it a second time.

Based on your perimeter selection, the calculator asks you to provide the length of the perimeter(s) and the number of policed access points in each perimeter, if any. The information fields generated for a single perimeter are illustrated in Figure 5, and the information fields generated with the selection of a double perimeter are illustrated in Figure 6. By default, the perimeter and checkpoint security questions have the "Yes" response highlighted. However, if you will not provide perimeter and/or checkpoint security, you can select "No" from the associated drop-box. Figure 5 highlights the drop-down box for the type of perimeter, and red circles indicate the two "Yes" or "No" drop-down boxes. Once you make your selection(s), the tool calculates the estimated number of checkpoint teams as well as the total number of perimeter barriers required.[8]

[7] Connors, Edward. Department of Justice, Office of Community Oriented Policing Services. "Planning and Managing Security for Major Special Events." March 2007. Available online: http://www.cops.usdoj.gov/Publications/e07071299_web.pdf (last accessed September 4, 2012).
[8] The calculation for the number of perimeter barriers is based on an assumed barrier length of five feet.

Figure 5: Perimeter/checkpoint factors – single perimeter

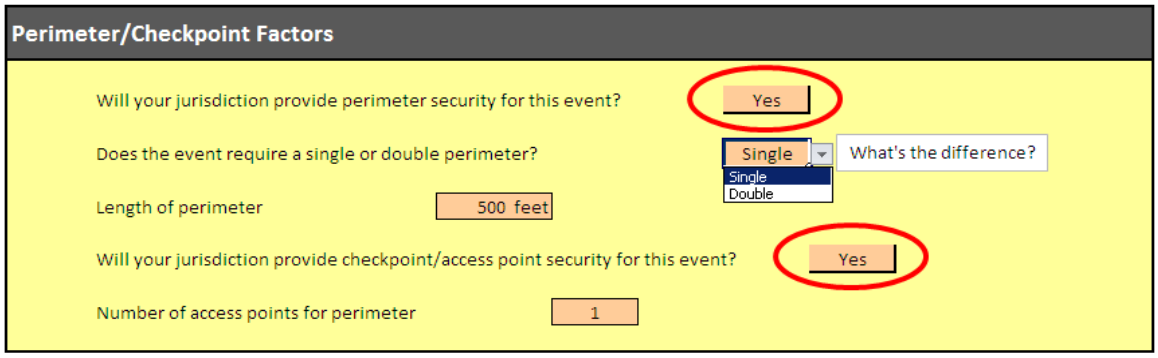
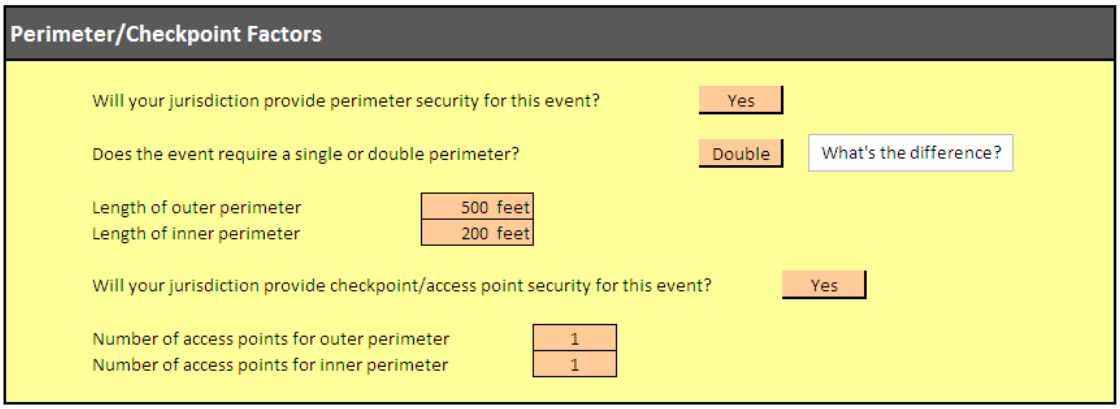


Figure 6: Perimeter/checkpoint factors - double perimeter

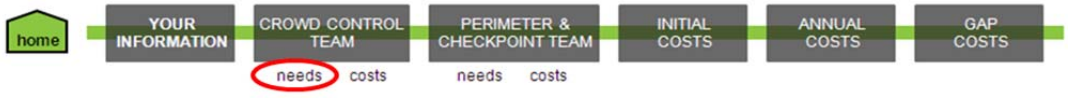


Next step (optional) – PSSR team needs and costs

Equipment, personnel, and training needs

Once you are satisfied with the information you have entered, you can address the detailed equipment needs and costs for each team. The tool will calculate Initial and Annual costs associated with the default equipment, personnel, and training needs for PSSR teams based on the information you specified. You can skip the "needs" steps and go immediately to any of the "costs" pages to see the cost summary based on default values. However, if you wish to make any changes to the default values or if you would like to review any of the default values being used, click on the "needs" link on the navigation bar, illustrated in Figure 7. There is a separate needs page for both the Crowd Control Team and the Perimeter and Checkpoint Team.

Figure 7: Navigation bar – needs



Clicking on "needs" will display a page that lists equipment categories as well as the equipment items that are relevant to each of those categories. You will also find a

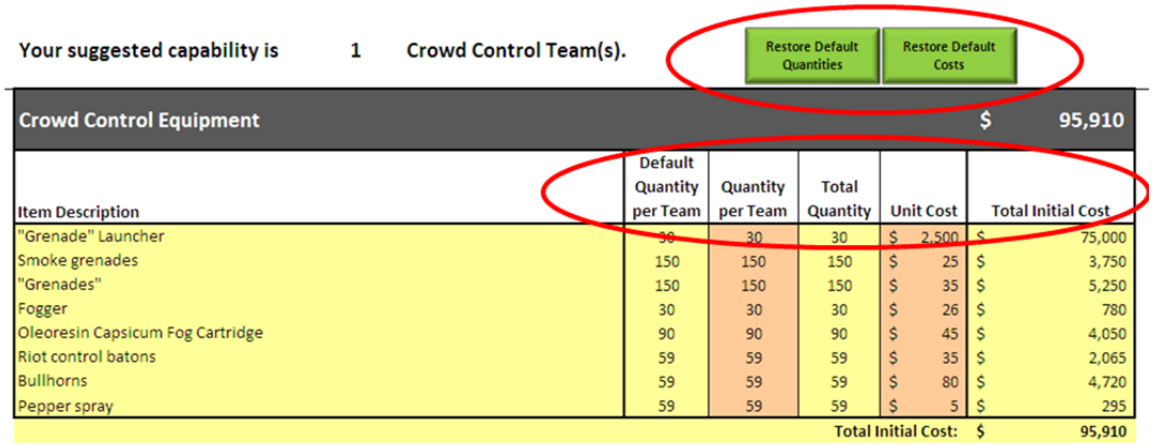
personnel category that reflects personnel comprising a PSSR team.[9] There is also a category that addresses training for personnel. You can scroll up and down the page to view the different categories and relevant listings.

Each equipment item, personnel position, and training course is structured in rows that are aligned with the following columns:

- Default Quantities
- Quantities[10]
- Unit Costs[11]
- Initial Costs[12]

Figure 8 shows the column headers for these fields (circled in red) and the orange cells in which you can enter jurisdiction-specific data.

Figure 8: PSSR team – needs



Your suggested capability is 1 Crowd Control Team(s).

Restore Default Quantities | Restore Default Costs

Crowd Control Equipment					$ 95,910
Item Description	Default Quantity per Team	Quantity per Team	Total Quantity	Unit Cost	Total Initial Cost
"Grenade" Launcher	30	30	30	$ 2,500	$ 75,000
Smoke grenades	150	150	150	$ 25	$ 3,750
"Grenades"	150	150	150	$ 35	$ 5,250
Fogger	30	30	30	$ 26	$ 780
Oleoresin Capsicum Fog Cartridge	90	90	90	$ 45	$ 4,050
Riot control batons	59	59	59	$ 35	$ 2,065
Bullhorns	59	59	59	$ 80	$ 4,720
Pepper spray	59	59	59	$ 5	$ 295
				Total Initial Cost:	$ 95,910

The default quantities are the suggested quantities appropriate to equip, staff, and train personnel for your suggested number of teams. [13]

The orange cells in the columns labeled "Quantities" and "Unit Costs" can be customized with data to reflect the realities and needs of your jurisdiction. It should be noted that quantities reflect resources per individual team. On the "Perimeter & Checkpoint Team – Needs" page, it is important to note that the default barrier used by perimeter and

[9] Note that the total personnel for the Crowd Control Team is used, along with your desired officer-to-attendee ratio, to calculate the number of Crowd Control Teams required for your event or response scenario. Therefore, as you adjust the personnel quantities, it is possible that the suggested number of Crowd Control Teams may change. This will happen automatically.

[10] Quantity inputs reflect the amount a jurisdiction has on hand or the desired amount for particular equipment items, personnel, or training courses.

[11] Unit Cost reflects the cost of a single/individual equipment item, personnel member, or training course.

[12] Under "Training," "Course Hours" replaces the field labeled "Unit Costs." Moreover, an additional field labeled "Backfill Rates" is included to reflect backfill rates for personnel taking training courses.

[13] Suggested quantities are derived from FEMA's resource-typing initiative.

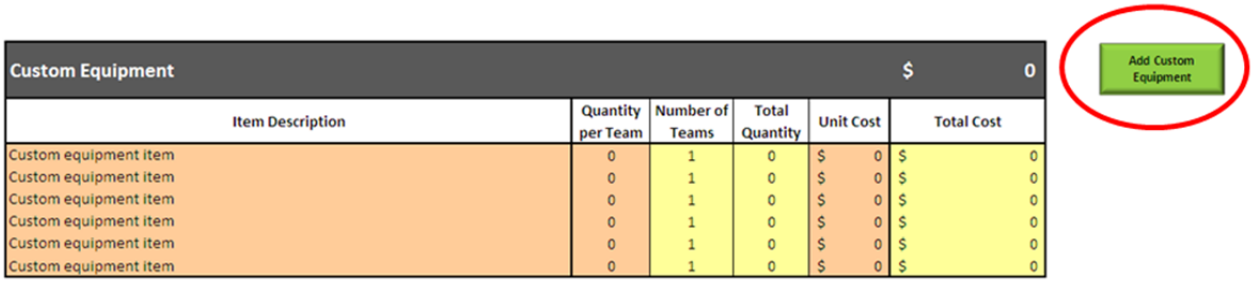
checkpoint teams is the plastic barrier (with a default unit cost of $350). Two other types of barriers are included in the equipment list and you may choose to distribute the total number of required barriers across a combination of these types.

If you want to restore the orange cells to default quantities and costs, click on the green buttons labeled “Restore Default.” These green buttons are circled in Figure 8.

Under “Training,” the orange rows labeled “User Input Training” allow you to add training courses, the number of personnel to be trained, the cost for the courses, and the backfill for training courses not already listed.

If you would like to include equipment not already included on this page, the orange rows under “User Input Equipment” allow you to do so. If you require additional rows, click on the green button circled in Figure 9.

Figure 9: PSSR team needs: additional equipment



Equipment, personnel, and training costs

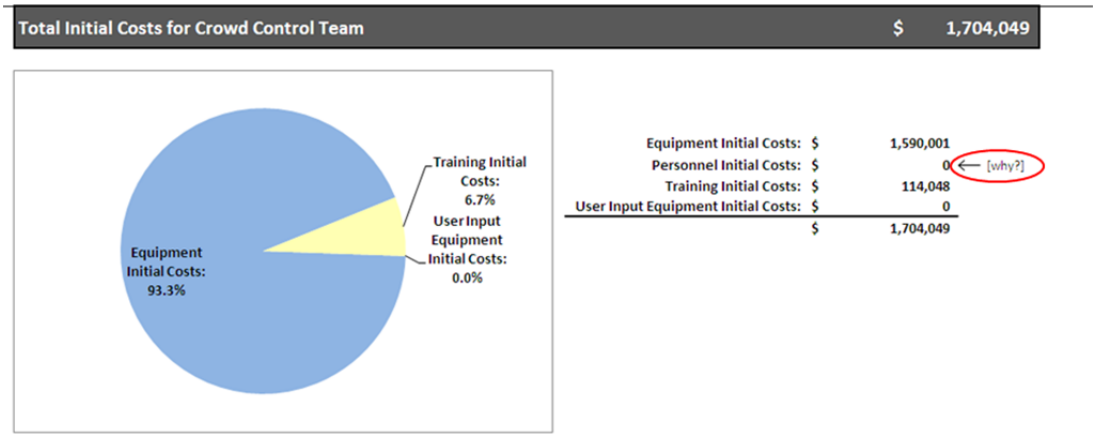
Total initial costs for each PSSR team

The tool automatically generates initial costs for each team type, as well as for each category under the “Equipment,” “Personnel,” and “Training” sections. To view the total initial costs for PSSR teams, use the navigation bar to click on “costs” under each of the PSSR team types, as shown in Figure 10.

Figure 10: Navigation bar: costs

The “costs” page shows two pie charts. The first displays total initial costs, broken down by equipment, personnel, and training categories. Total initial costs are associated with the purchase of equipment and supplies, rather than the annual costs of maintaining and operating them. (For more details about the cost analysis, please see the PSSR White Paper, available on the CNA website.) To the right of the pie chart is the breakdown of the total initial costs, as well as the summation of those costs. Figure 11 provides a snapshot of sample initial costs for Crowd Control Teams. Clicking on the white “← [why?]” text box circled in Figure 11 explains why there are no initial personnel costs for PSSR teams, as personnel costs for teams are incurred only in operational situations.

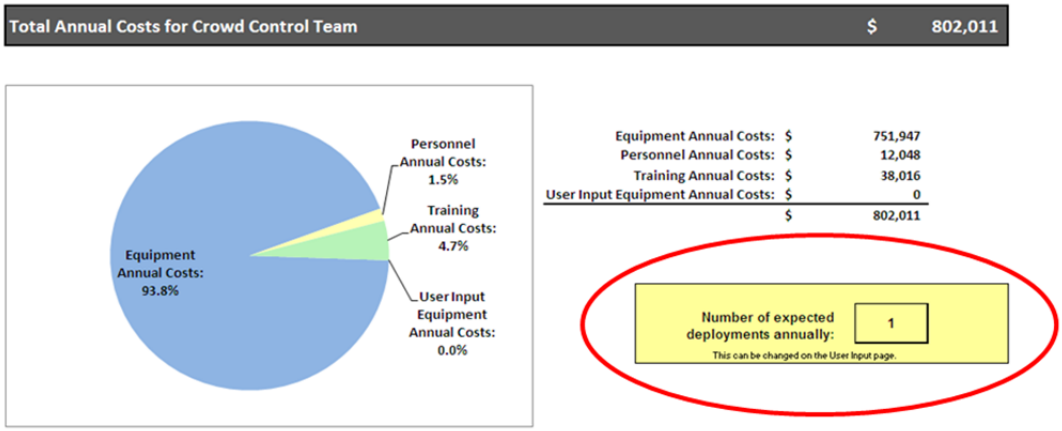
Figure 11: PSSR team: total initial costs



Total annual costs for each PSSR team

The second pie chart shows total annualized costs for the PSSR team. Figure 12 provides a snapshot of the section. This section helps planners calculate the cost of maintaining a PSSR team. The pie chart in this section also breaks down total costs into the categories of "Equipment," "Personnel," and "Training." All categories and associated costs are listed to the right of the pie chart. The yellow box circled in red in Figure 12 shows the number of deployments expected annually; this value can only be adjusted by changing the value entered in the User Input page.

Figure 12: PSSR team – total annual costs



Further down the page, you can view annual costs for equipment items and training in a box called "Annualized Cost Breakdown." This in-depth breakdown of costs allows you to view the annualized cost factors (e.g., energy costs, operating costs, repair costs) in an organized matrix. You can also adjust cost factor parameters, as appropriate, for your jurisdiction.

You can customize cost factors in the orange cells of the columns marked "Energy," "Operating," "Repair," and "Upgrade," as shown in Figure 13. Note that changes made on the Crowd Control Team "costs" page are not automatically duplicated on the

Perimeter and Checkpoint Team “costs” page. Repeat the customization process for each of the team types that your jurisdiction supports.

Figure 13: Annual cost breakdown

Annual Cost Breakdown

Cost Factors	(2) Energy	(3) Operating	(4) Repair	(5) Upgrade
Large Vehicle	$0.36/mile	$1,200	$0.15/mile	$0
Small Vehicle	$0.20/mile	$1,200	$0.15/mile	$0
Equipment (as a percentage of the initial cost)	10%	5%	10%	25%

For vehicles: Energy and Repair cost factors are represented in cost per mile. Operating costs represent the annual fixed cost to store the vehicle.

Equipment Costs $ 751,947

Item Description	Annual Mileage	Quantity	Unit Cost	(1) Initial	Shelf Life	R-Cost	(2) Energy	(3) Operating	(4) Repair	(5) Upgrade	Annual Costs	Category Total
Patrol Vehicles	12,000	14	$ 10,000	$ 140,000	10	$ 14,000	$ 33,600	$ 16,800	$ 25,200	$ 0	$ 89,600	
Prisoner Transport Vans	12,000	2	$ 20,000	$ 40,000	10	$ 4,000	$ 8,640	$ 2,400	$ 3,600	$ 0	$ 18,640	$ 108,240
"Grenade" Launcher		30	$ 2,500	$ 75,000	5	$ 15,000	$ 0	$ 3,750	$ 7,500	$ 0	$ 26,250	
Smoke grenades		150	$ 25	$ 3,750	1	$ 3,750	$ 0	$ 0	$ 375	$ 0	$ 4,125	
"Grenades"		150	$ 35	$ 5,250	1	$ 5,250	$ 0	$ 0	$ 525	$ 0	$ 5,775	
Fogger		30	$ 26	$ 780	1	$ 780	$ 0	$ 0	$ 78	$ 0	$ 858	
Oleoresin Capsicum Fog Cartridge		90	$ 45	$ 4,050	1	$ 4,050	$ 0	$ 0	$ 405	$ 0	$ 4,455	
Riot control batons		59	$ 35	$ 2,065	10	$ 207	$ 0	$ 0	$ 207	$ 0	$ 413	
Bullhorns		59	$ 80	$ 4,720	10	$ 472	$ 472	$ 236	$ 472	$ 0	$ 1,652	
Pepper spray		59	$ 5	$ 295	1	$ 295	$ 0	$ 15	$ 30	$ 0	$ 339	$ 43,867
Weather-resistant Field Booking Forms		30	$ 40	$ 1,200	1	$ 1,200	$ 0	$ 60	$ 120	$ 0	$ 1,380	
Digital camera		30	$ 400	$ 12,000	5	$ 2,400	$ 1,200	$ 600	$ 1,200	$ 3,000	$ 8,400	
Fingerprinting equipment		30	$ 30	$ 900	1	$ 900	$ 90	$ 45	$ 90	$ 225	$ 1,350	$ 11,130
Soft Body Armor		59	$ 1,000	$ 59,000	5	$ 11,800	$ 0	$ 0	$ 5,900	$ 0	$ 17,700	
Portable Radios		59	$ 570	$ 33,630	5	$ 6,726	$ 3,363	$ 1,682	$ 3,363	$ 0	$ 15,134	

For items entered in the “User Input Equipment” section, the annual costs section is shown in Figure 14. In this section, all cost factors are determined by user input in the orange cells. In addition, the shelf life for each item is customizable.

Figure 14: User input equipment costs

User Input Equipment $ 0

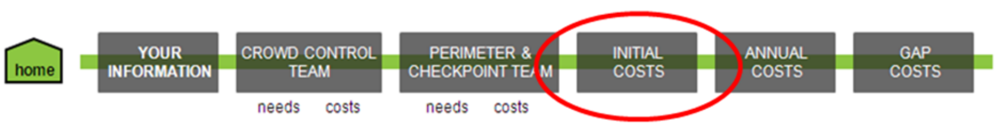
Item Description	Quantity	Unit Cost	(1) Initial	Shelf Life	R-Cost	(2) Energy	(3) Operating	(4) Repair	(5) Upgrade	Annual Costs
Custom equipment item	0	$ 0	$ 0	5	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Custom equipment item	0	$ 0	$ 0	5	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Custom equipment item	0	$ 0	$ 0	5	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Custom equipment item	0	$ 0	$ 0	5	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Custom equipment item	0	$ 0	$ 0	5	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Custom equipment item	0	$ 0	$ 0	5	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0

Viewing results

Initial costs

After you enter the needs and costs for each type of PSSR team you choose, the tool generates the results. On the navigation bar, click on “Initial Costs” (circled in Figure 15) to view these results.

Figure 15: Navigation bar: initial costs



This page displays the following two sections:

- Input Summary
- Initial Cost Breakdown

The first section summarizes the information from the page entitled "Your Info." Figure 16 shows a snapshot of the Input Summary section.

Figure 16: Initial costs – input summary

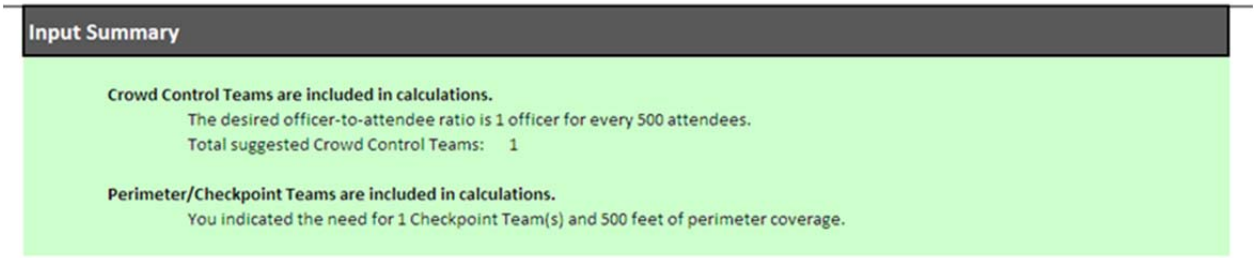
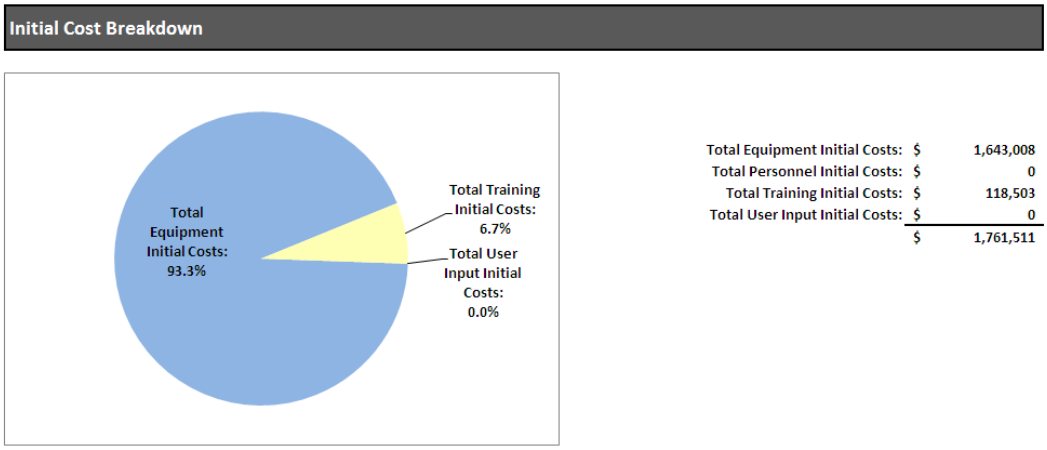


Figure 17 illustrates the second section. In "Initial Cost Breakdown," a pie chart depicts total initial costs, broken down by equipment, personnel, and training categories. The total initial costs for equipment are associated with the purchase of equipment and supplies, rather than the annual costs of maintaining and operating them. To the right of the pie chart is the breakdown of the total initial costs, as well as the sum of those costs.

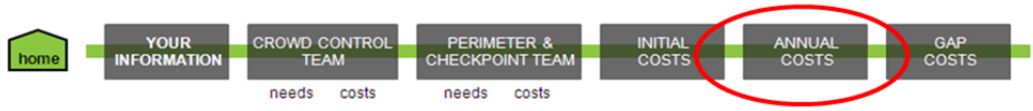
Figure 17: Initial cost breakdown



Annual costs

You can view annualized costs for PSSR teams by clicking on "Annual Costs" in the navigation bar, as shown in Figure 18.

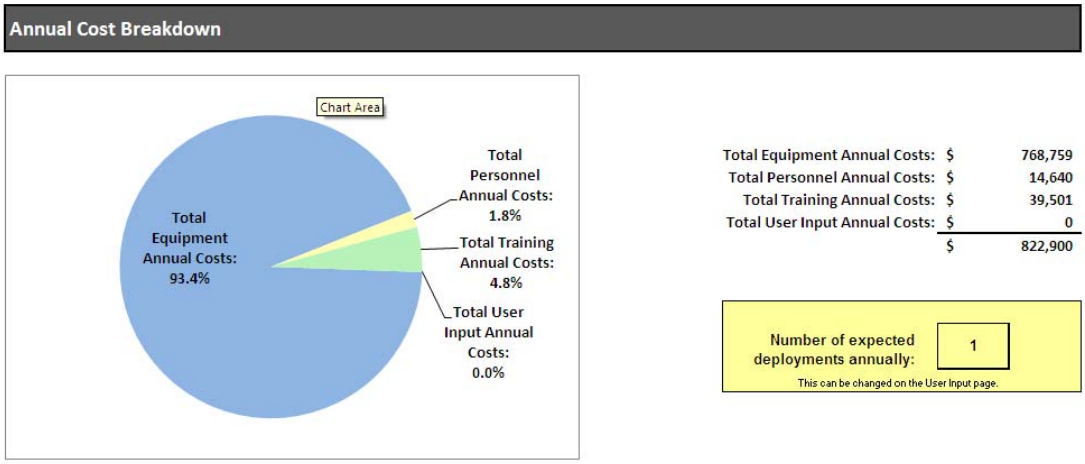
Figure 18: Navigation bar – annual costs



This page presents two sections: “Input Summary” and “Annual Cost Breakdown.” The Input Summary section displays the same information you provided in the “Your Info” section.

The second section displays annualized costs for PSSR teams, broken down into equipment, personnel, and training categories. These categories—and your associated costs—are listed to the right of the pie chart, as shown in Figure 19.

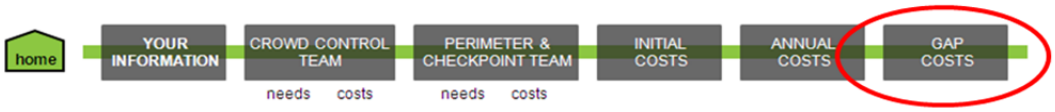
Figure 19: Annual cost breakdown



Gap costs

You can view costs associated with your current capability gaps by clicking on “Gap Costs” in the navigation bar, as shown in Figure 20.

Figure 20: Navigation bar – gap costs

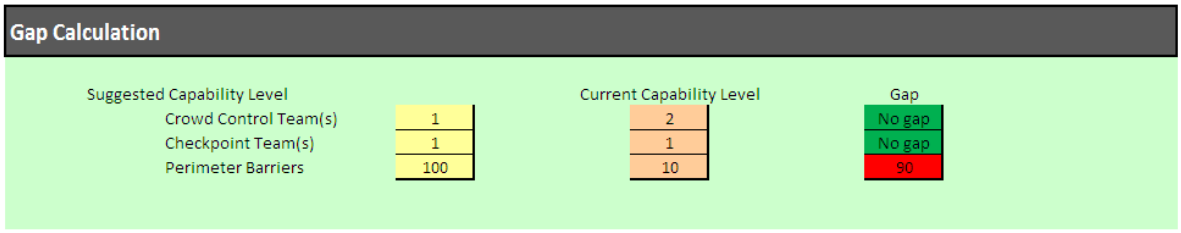


This page displays the following two sections:

- Gap Calculation
- Gap Costs

Figure 21 illustrates the first section. The “Gap Calculation” section shows your suggested PSSR team capability, current PSSR team capability, and any gaps between these two.

Figure 21: Gap costs – input summary and gap calculation

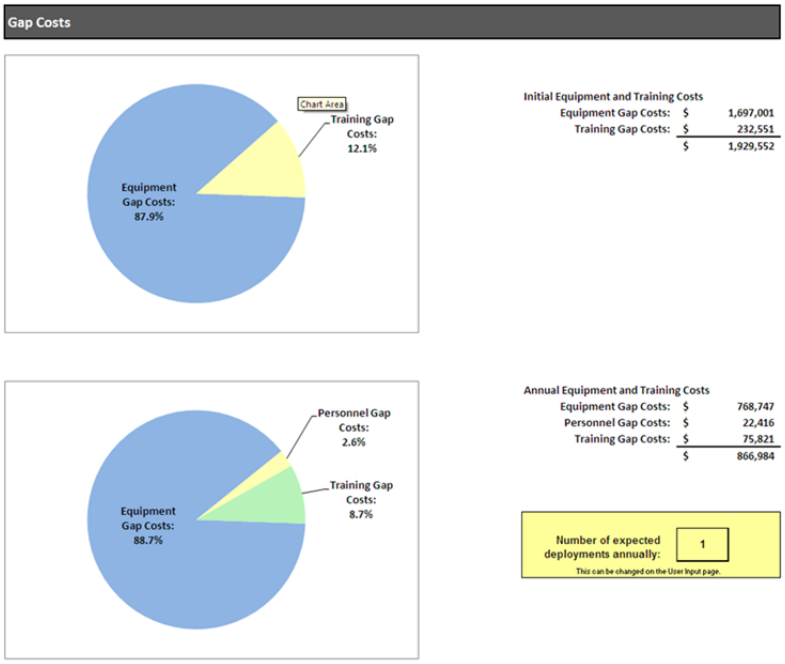


You can click on the orange cells to enter actual data about your current PSSR team capabilities. Once you enter data for each PSSR team type and the number of perimeter barriers available to your jurisdiction, the tool generates the difference between current and suggested PSSR team capability. If any of the PSSR team types have capability shortages, the cells located under the last field—"Gap"—will be highlighted in red. Cells that remain green meet or exceed the suggested capability levels. See Figure 21 above for an illustration.

The second section on this page ("Gap Costs") shows costs associated with gaps—that is, the gaps highlighted in red from the Gap Calculation. Figure 22 shows sample pie charts and gap costs. The first pie chart in this section reflects initial gap costs to acquire equipment and training for each team type. The second pie chart shows total annual costs for equipment, personnel, and training categories.

This tool estimates the number of PSSR teams that your jurisdiction might need, the associated costs for those teams, and any gap costs between your current and suggested capability. The information from this tool can be used to inform long-term budget planning to meet your jurisdiction's needs.

Figure 22: Gap costs



References

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